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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,939	10/23/2001	Moshe Rock	952/40	2358

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EXAMINER

BOYD, JENNIFER A

ART UNIT PAPER NUMBER

1771

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/047,939	Applicant(s) ROCK ET AL. <i>ed</i>	
	Examiner Jennifer A Boyd	Art Unit 1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/24/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The Applicant's Amendments and Accompanying Remarks, filed March 3, 2004, have been entered and have been carefully considered. Claims 1 – 12 and 14 are pending. In view of the Applicant's Arguments, the Examiner withdraws the 35 U.S.C. 103(a) rejection of claims 1 – 12 and 14 as being unpatentable over Rock et al. (US 5,817,391) as detailed in paragraphs 4 and 5 of the previous Office Action December 1, 2003. Despite these advances, the invention as currently claimed is not found to be patentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1 – 4, 6 – 7, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rock et al. (US 5,817,391) in view of Lumb et al. (US 5,312,667).

Rock is directed to a three-dimensional knit spacer fabric (Title) which is concerned with improved fabric construction for enhancing the transport of body fluids (column 1, lines 35 – 40).

As to claim 1, Rock teaches a fabric comprising a first fabric layer, a second fabric layer and a resilient yarn interconnecting the two layers. The Examiner equates the first fabric layer to Applicant's "inner fabric layer" and the second fabric layer to Applicant's "outer fabric layer". Rock teaches that the first fabric layer 13 is made from stitch yarn 17 and backing yarn 25 made

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of polyester or nylon that has been rendered hydrophilic (column 2, lines 39 – 45). Rock teaches that the surface of the first fabric layer 13 is preferably raised (column 2, lines 54 – 60). In Figure 2, it is shown that fibers of the first fabric layer 13 are raised in a regular pattern; the raised portions define the boundaries for intersecting rows and columns which cover the entirety of the layer. The raised portions appear on the surface of the first fabric layer 13 so they can be considered open. The Examiner equates the rows and columns to Applicant's "plurality of continuous, open channels". Rock teaches that the second fabric layer 15 comprises moisture absorbent fibers (column 3, lines 8 – 10). Rock teaches that the fabric is knitted on a double-needle bar warp knitting machine (column 1, lines 65 – 67 and column 2, lines 1 – 5), thus the first and second fabric layers are concurrently knitted. It should be noted that "a plaited construction" describes a fabric that is produced from two yarns of different colors, characteristics or qualities, one of which appears on the face and the other on the back. Rock meets this limitation by requiring that the first fabric layer comprises hydrophilic fibers and the second fabric layer comprises hydrophobic fibers. Rock teaches that the fabric is designed to facilitate moisture transport away from the body and into an absorbent layer of hydrophilic fibers (column 2, lines 25 – 30). Therefore, the first fabric layer, or "inner fabric layer", which is hydrophobic, is configured to be worn facing skin and the second fabric layer, or "outer fabric layer", which is moisture absorbent, is configured to be worn away from the skin.

As to claim 2, Rock teaches in Figure 2 that the first fabric layer 13, or "inner fabric layer" is raised and the second fabric layer 15, or "outer fabric layer" is not raised.

As to claim 3, Rock teaches that the second fabric layer, or "outer fabric layer", comprises absorbent material such as cotton, rayon or wool (column 3, lines 8 – 20).

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As to claim 4, Rock teaches that the first and second fabric layers, or “inner and outer fabric layers”, are knit (Abstract).

As to claim 6, Rock teaches that the first fabric layer, or “inner fabric layer”, comprises polyester or nylon fibers (column 2, lines 39 – 45).

As to claim 7, Rock teaches that the moisture absorbent material of the second fabric layer, or “outer fabric layer”, can comprise synthetic fibers (column 3, lines 15 – 20).

As to claim 12, Rock teaches in Figure 2 that fibers of the first fabric layer 13 are raised in a regular pattern; the raised portions define the boundaries for intersecting rows and columns which cover the entirety of the layer. The Examiner equates the rows and columns to Applicant’s “plurality of intersecting vertical and horizontal channels”.

As to claim 14, Rock teaches a fabric comprising a first fabric layer, a second fabric layer and a resilient yarn interconnecting the two layers. The Examiner equates the first fabric layer to Applicant’s “inner fabric layer” and the second fabric layer to Applicant’s “outer fabric layer”. Rock teaches that the first fabric layer 13 is made from stitch yarn 17 and backing yarn 25 made of polyester or nylon that has been rendered hydrophilic (column 2, lines 39 – 45). Rock teaches a second fabric layer situated next to, or “immediately adjacent”, to the first fabric layer (column 2, lines 1 – 10). Rock teaches that the second fabric layer 15 comprises moisture absorbent fibers (column 3, lines 8 – 10). Rock teaches that the surface of the first fabric layer 13 is preferably raised (column 2, lines 54 – 60). The Examiner equates the raised portions of the surface to Applicant’s “raised fiber pillars”. In Figure 2, it is shown that fibers of the first fabric layer 13 are raised in a regular pattern; the raised portions define the boundaries for intersecting rows and columns which cover the entirety of the layer. The raised portions appear on the

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surface of the first fabric layer 13 so they can be considered open. Rock teaches that the fabric is knitted on a double-needle bar warp knitting machine (column 1, lines 65 – 67 and column 2, lines 1 – 5), thus the first and second fabric layers are concurrently knitted. It should be noted that “a plaited construction” describes a fabric that is produced from two yarns of different colors, characteristics or qualities, one of which appears on the face and the other on the back. Rock meets this limitation by requiring that the first fabric layer comprises hydrophilic fibers and the second fabric layer comprises hydrophobic fibers. Rock teaches that the fabric is designed to facilitate moisture transport away from the body and into an absorbent layer of hydrophilic fibers (column 2, lines 25 – 30). Therefore, the first fabric layer, or “inner fabric layer”, which is hydrophobic, is configured to be worn facing skin and the second fabric layer, or “outer fabric layer”, which is moisture absorbent, is configured to be worn away from the skin.

As to claim 1, Rock fails to teach that the first fabric layer, or “inner fabric layer”, and second fabric layer, or “outer fabric layer”, are immediately adjacent to each other.

Lumb teaches a composite fabric comprising a polyester or nylon material and a moisture absorbent material such as cotton (column 1, lines 5 – 10). Lumb teaches that the polyester or nylon material used as the first fabric layer is hydrophilic which moves the moisture quickly away from the skin, transported through the first layer to the second fabric layer and then evaporated from the outside of the garment (column 1, lines 50 – 60). Lumb notes that the plaited fabric construction helps create this substantial moisture concentration gradient which results in improved moisture transport (column 1, lines 60 – 65).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to create the composite fabric of Rock with a plaited construction resulting in immediately adjacent layers as suggested by Lumb motivated by the desire to create a composite fabric with superior moisture transport properties.

As to claims 5 and 8 – 11, Rock in view of Lumb discloses the claimed invention except for that the inner fabric layer comprises between 30 – 70% by weight of the fabric and second fabric layer comprises between 70-30% by weight of the fabric as required by claim 5, the denier of the yarn fibers of the inner fabric layer and the outer fabric layer are in a ratio of between about 1:20-10:1 as required by claim 8, the denier of the yarn fibers of the inner fabric layer and the outer fabric layer are in a ratio of between 1:20 – 10:1 as required by claim 8, the denier ratio of the yarn of the first inner fabric layer to that of the second outer fabric layer is between about 1:6 and 1:1.5 as required by claim 9, the yarn fibers of the inner fabric layer are in the size range of between about 0.15 and 3.0 dpf and the yarn fibers of the outer fabric layer are in a size range of between about 0.3 and 3.0 dpf as required by claim 10 and the yarn of the outer fabric layer is in a size range of between about 50 and 300 denier and the yarn of the inner fabric layer is in a size range of about 50 to 200 denier as required by claim 11. It should be noted that the weight ratios of the first and second fabric layers, denier ratios of the first and second fabric layers and the yarn size of the first and second layers are result effective variables. For example, as the weight and denier of the first layer increases, the fabric layer will become heavier and more rigid. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an inner fabric layer which comprises between 30 – 70% by weight of the

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fabric and second fabric layer comprises between 70-30% by weight of the fabric as required by claim 5, the denier of the yarn fibers of the inner fabric layer and the outer fabric layer are in a ratio of between about 1:20-10:1 as required by claim 8, the denier of the yarn fibers of the inner fabric layer and the outer fabric layer are in a ratio of between 1:20 – 10:1 as required by claim 8, the denier ratio of the yarn of the first inner fabric layer to that of the second outer fabric layer is between about 1:6 and 1:1.5 as required by claim 9, the yarn fibers of the inner fabric layer are in the size range of between about 0.15 and 3.0 dpf and the yarn fibers of the outer fabric layer are in a size range of between about 0.3 and 3.0 dpf as required by claim 10 and the yarn of the outer fabric layer is in a size range of between about 50 and 300 denier and the yarn of the inner fabric layer is in a size range of about 50 to 200 denier as required by claim 11 since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the weight ratios of the first and second fabric layers, denier ratios of the first and second fabric layers and the yarn size of the first and second layers in order to create a properly balanced fabric with desired flexibility and strength.

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Response to Arguments


4. Applicant's arguments with respect to claims 1 -12 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jennifer Boyd
March 24, 2004


Ula C. Ruddock
Primary Examiner
Tech Center 1700